GUESS PAPER 2021

کامیابی کا تعویذ

BIOLOGY

2ND YEAR

امتحان میں 100% کامیابی کی گارنٹی

☆ پیپر Setter کے ذہن کو مد نظر رکھ کر تیار کیے گئے سوالات

☆ یاد رکھیں! اب وقت انتہائی کم رہ گیا ہے۔

★ صرف ایک ماہ کے اندر بورڈ امتحان کی مکمل تیاری کریں۔

اہم ترین مختصر، انشائیہ اور حل شدہ معروضی سوالات کے ساتھ

پنجاب کے تمام بورڈ کے لیے (اعلیٰ نمبروں کے حصول کی ضمانت)

اب فیل ہونا بھول جائیں

ہم نے تو چراغ جلا کر سر راہ رکھ دیا
اب جس کے جی میں آئے وہی پائے روشنی

Guess papers are handy for practicing. You can solve many guess papers and get an idea about where you stand regarding your exam preparation. You can set a timer to practice Attempting questions within the required limit. With regular practice, your mistakes will be minimal and your speed will increase.

SPECIAL EFFORTS: SIR M QADEER

Objective Type

5)The tolerance of dehydration is			
a) Osmoconformers	b) Osmoregulators	✔c) Anhydrobiosis	d) Dehydration
6)Which one of the following is excretophore ?			
a) Stem	b) Root	c) Bark	✔d) Leaves
7) Animals excreting urea are called			
✔a) Ureotelic	b) Ammonotelic	c) Uricotelic	d) Excretotelic
8)A diluted solution compared to cell concentration is termed as			
a) Hypertonic	✔b) Hypotonic	c) Isotonic	d) Paratonic
9) One gram of ammonia requires how much amount of water for its removal			
a) 50 ml	b) 100 ml	c) 250 ml	✔d) 500 ml
10) Animals excreting ammonia are			
a) Ureotelic	b) Uricotelic	✔c) Ammonotelic	d) Excretotelic
11) Removal of nitrogenous wastes that requires less amount of water is			
a) Urea	b) Ammonia	✔c) Uric acid	d) Lactic acid
12) Number of NH3 molecules required to produce one molecule of urea is			
a) 1	✔b) 2	c) 3	d) 4
13) How much water is needed to excrete 1 g of Ammonia ?			
a) 400 ml	✔b) 500 ml	c) 600 ml	d) 700 ml
14) Major homeostatic function of liver is storage of			
a) Bile	b) Cholesterol	c) Urea	✔d) Iron
15) Urea is produced in			
a) Lungs	✔b) Liver	c) Kidneys	d) Pancreas
16) Urine leaves kidney through a duct called			
a) Urethra	✔b) Ureter	c) Urinary bladder	d) Pelvis
17)Blood supplied to kidney from each cardiac beat is			
a) 10 %	✔b) 20 %	c) 30 %	d) 50 %
18)Mammalian kidney including human is adapted to conserve water up to			
a) 69.5 %	b) 79.5 %		✔d) 99.5 %
22)Super cool cytosol , without ice formation , is caused by			
a) Heat shock protein	b) Unsaturated fatty acids	✔c) Solutes	d) Enzymes
23)Which animal is not poikilotherm ?			
a) Star-fish	b) Frog	c) Tortoise	✔d) Parrot
24)Lizards bask is sun to gain			
✔a) Heat	b) Cold	c) Air	d) Moisture
25)Most land mammals respond to cold by raising their			
a) Tail	b) Head	c) Legs	✔d) Furs
26)Which is an endotherm ?			
✔a) Bird	b) Bar	c) Humming bird	d) Reptiles
27)The homeostatic thermostat in man is			
a) Thalamus	b) Cerebrum	c) Medulla	□d) Hypothalamus
28) During infection , pyrogens are produced in the human body by			
a) RBCs	✔b) WBCs	c) Platelets	d) Blood plasma
29) The chemical substance , responsible for raising human body temperature are			
a) Leukocytes	✔b) Pyrogens	c) Pyrexia	d) Pollutants
30)In bacterial and viral infection , pathogens and leukocytes cells produce a chemical called			
a) Pyrexia	b) Toxins	c) Alfatoxins	✔d) Pyrogen
31)The fever causing chemical substances in human are			
a) Pathogens	b) Poisons	c) Alfatoxins	✔d) Pyrogen
32)Aldosterone is involved in			
a) Transport of potassium ions into kidneys	b) Transport of water	✔c) Uptake of Sodium in	d) Reabsorption of water

		Loop of Henle	
33)Bark is made up of			
✔a) Cork , cork cambium , pith and phloem	b) Wood , pith and Xylem	c) Cork , cork cambium cotex & phloem	d) Xylem , phloem and cortex
38)The sclerenchyma cells found in seed coats and nut shell are the			
✔a) Fibers	b) Vessels	c) Trachieds	d) Sclerieds
39)Which of the following cells have angular thickenings in their primary walls ?			
✔a) Collenchyma	b) Sclerenchyma	c) Fibers	d) Vessels
40)Bundle caps in sunflower stem , are formed by			
✔a) Sclerenchyma	b) Parenchyma	c) Mesenchyma	d) Collenchyma
41)The membrane that bounds vacuole is called			
a) Primary cell	b) Vascular wall	c) Pelicle	✔d) Tonoplast
42)Which bone provide attachment site for muscles ?			
✔a) Compact bone	b) Spongy bone	c) Soft bone	d) Cartilage
43)Number of thoracic vertebrae in the thoracic region is			
a) 8 vertebrae	b) 10 vertebrae	✔c) 12 vertebrae	d) 14 vertebrae
44)The vertebral column of human consist of vertebrae			
a) 31	b) 32	✔c) 33	d) 34
45)A bone which connects scapula with sternum			
a) Humerus	b) Ischium	c) Pubis	✔d) Clavicle
46)The number of pelvic vertebrae in vertebral column of man is			
a) 5	b) 7	✔c) 9	d) 12
47)Fibrous joint are formed in			
✔a) Skull	b) Leg	c) Arm	d) Chest
48)Joints that are held together by short fibers embedded in connective tissue			
✔a) Fibrous joints	b) Cartilaginous joints	c) Synovial joints	d) Hinge joints
49)The disease which cause immobility and fusion of vertebral joints is called			
a) Sciatica	b) Arthritis	c) Rickets	✔d) Spondylosis
50)Rickets is caused by deficiency of			
a) Vitamin A	b) Vitamin B	c) Vitamin C	✔d) Vitamin D
53)Sciatica is characterized by stabbing pain radiating over the course of			
a) Sciatic artery	✔b) Sciatic n		d) Sciatic capillary
55)Cramp is also known as			
a) Tetany	✔b) Tetanic contraction	c) Tetanus	d) Muscle fatigue
56)Muscle fatigue is caused by accumulation of			
a) CO2	b) Fumaric acid	✔c) Lactic acid	d) Alcohol
57)Complete immobilization of muscle leads to			
a) Increase in capillaries	✔b) Severe atrophy	c) Increase in mitocondria	d) Resistance to fatigue
58)The skeletal muscles are attached with the bones through the			
a) Ligament	✔b) Tendons	c) Sarcolemma	d) Myofibrils
59)Skeletal muscle fibres have diameter			
a) 100 - 200m	b) 10 - 100m	✔c) 0 - 10m	d) 100 - 1000m
60)Tetanus is caused by			
✔a) Bacteria	b) Virus	c) Fungi	d) Protist
61)The diameter of skeletal muscle fibres is			
a) 10 - 80m	✔b) 10 - 100m	c) 10 - 120m	d) 10 - 135m
62)In birds , the sternum is modified to form			
✔a) Keel	b) Neck	c) Rib	d) Clavicle
63)Proteins that bind to calcium in muscle contraction			
a) Actin	b) Myosin	c) Tropomyosin	✔d) Troponin
64)The cell found in seed coats and nut shells are			
a) Fibers	✔b) Sclereides	c) Vessels	d) Trachea
65)The collenchymatous cells are highly lignified and found in the			
a) Epidermis	✔b) Cortex	c) Pith	d) Xylem

66)Tetany is a disease caused by			
✔a) Low calcium in blood	b) Low sugar in blood	c) Low vit. D in blood	d) High calcium in blood
67)The chlorosis condition in plants due to insufficient formation of			
a) CO_2	b) Water	c) O_2	✔d) Chloropy ll
72) Which neurons have long axon			
✔a) Sensory	b) Motor	c) Associative	d) Cell body
73) The structure which respond are called.			
✔a) Effectors	b) Nerves	c) Receptors	d) Sense organs
74) The processes conducting impulses away from the cell body are called.			
a) Dendrites	b) Dendron	c) Nissl's granules	✔d) Axon
75)Nissl's granules are groups of			
a) Mesosomes	b) Lysosomes	✔c) Ribosomes	d) Chromosomes
76)Neuroglial cells provide the neuron with.			
a) Protection	b) Support	c) Locomotion	✔d) Nutrition
77)The cytoplasmic process / fibres which carry impulse towards cell body is called.			
✔a) Dendron	b) Axon	c) Nissl's granules	d) Neurofibrils
78)Which of the following receptors produce the sensation of pain.			
✔a) Nociceptors	b) Chmoreceptors	c) Pacinian corpuscles	d) Mechanoreceptors
79)During non - conducting state the neuron membrane is permeable to efflux of			
a) K^+	✔b) Na^+	c) Cl^-	d) Ca^{++}
80)The normal speed of nerve impulse in human is			
✔a) 100 m/sec	b) 110 m/sec	c) 120 m/sec	d) 130 m/sec
81)Cell membrane of neuron is slightly permeable to .			
✔a) K^+	b) Na^+	c) Ca^{++}	d) Fe^{++}
82)Microscopic gap between the two neurons is called as			
a) Synapsis	✔b) Synapse	c) Collapse	d) Presynapse
83)A nerve is			
a) Collection of neurons	b) Connection of dendrites and axons	✔c) Bundle of axons and dendrites bounded by connective tissue	d) Bundle of axons or dendrites
88)Flowering is induced in pineapple by growth hormone called .			
a) Gibberellins	b) Abscisic acid	c) Cytokinins	✔d) Ethene
89)Which one is not a part of limbic system ?			
✔a) Thalamus	b) Hypothalamus	c) Amygdala	d) Hippocampus
90)Some times parthenocarpy is artificially induced for commercial purpose as in tomato , peppers by adding .			
a) Gibberellins	b) Cytokinins	✔c) Auxins	d) Ethene
91)Reproduction is very important to the survival of			
✔a) Species	b) Individual	c) Population	d) Community
92)In spermatophytes , important step in land adaption is the evolution of .			
a) Seed coat	✔b) Pollen tube	c) Fruit	d) Flower
93)Which one is Parthenogenic Fruit .			
a) Apple	✔b) Pineapple	c) Peach	d) Mango
94)The special condition of rest , which enables an embryo to survive the long periods of unfavourable environment condition , is called			
a) Bud dormancy	b) Leaf dormancy	c) Stem dormancy	✔d) Seed dormancy
95)Fruit ripening is often accompanied by a burst of respiratory activity called the .			
a) Dimetric	b) Climax	✔c) Climactric	d) Trimetric
96)Germinating pollen grain is a rich source of .			
a) Gibberellins	✔b) Auxins	c) Abscisic acid	d) Cytokinin
97)Which one of the following is a type of asexual reproduction ?			
a) Fertilization	b) Vernalization	✔c) Apomixes	d) Photoperiodism
98)In honey bee , males are haploid and produce sperms by .			
✔a) Mitosis	b) Meiosis	c) Apomixis	d) Parthenogenesis

99)Development of an egg into embryo without fertilization is called as .			
a) Parthenocarpy	✔b) Parthenogenesis	c) Meiosis	d) Fragmentation
100)Diploid parthenogensis occurs in .			
a) Wasp	b) Ant	✔c) Aphid	d) Bee
106)Germs cells in the ovary produce many .			
a) Spermatogonia	b) Zoospores	c) Zygospores	✔d) Oogonia
107)Oviduct opens into .			
✔a) Uterus	b) Ureter	c) Ovary	d) Vagina
108)Gonorrhoa is caused by .			
✔a) Neisseria	b) T.Pallidum	c) Herpes simplex	d) Clostridium
109) Syphilis is caused by a spirochaete named as .			
a) Nisseria gonorrhoeae	b) Escheria coli	✔c) Treponema pallidum	d) Hyphomicrobiam
110) Release of egg from follicle is called as .			
✔a) Ovulation	b) Menstruation	c) Follicle artesia	d) Fertilization
111) The increase of level of estrogen stimulates secretion of .			
a) ACTH	b) FSH	c) Progesterone	✔d) LH
112) Developing Seeds are rich source of .			
a) Auxins	b) Cytokinins	c) Gibberellins	✔d) All of these
113) Oviduct open into .			
✔a) Uterus	b) Cervix	c) Vagina	d) Bladder
114) Luteinizing hormone induces .			
a) Flowering	b) Vernalization	c) Menopause	✔d) Ovulation
115) Apical meristems are present in .			
✔a) Shoot and root rips	b) Vascular cambium	c) Corks ambium	d) Stem nodes
116)Primary growth in plants is caused by .			
✔a) Apical meristem	b) Lateral meristem	c) Intercalary meristem	d) Rib meristem
117)Secondary growth leads to an increase in the diameter of the .			
a) Stem	b) Root	c) Leaf	✔d) Stem and Root
122)Blastomeres are formed during .			
a) Cleavage	b) Gastrulation	✔c) Morulla	d) Fertilization
123)The shell , over thick egg , is secreted as it passes through .			
a) Ovary	✔b) Oviduct	c) Ulterus	d) Cloaca
124)The cavity formed between somatic and splanchnic mesoderm is .			
a) Archenteron	b) Hensen's node	✔c) Coelom	d) Neurocoel
125)The discoidal cap of cells above the blastocoel is called .			
a) Ectoderm	b) Mesoderm	c) Endoderm	✔d) Blastoderm
126)Clear cytoplasm in an Ascidian zygote produces .			
a) Muscles cell	✔b) Larval epidermis	c) Gut	d) Notochord
127)The condition in which an individual has small skull is termed as .			
a) Harelip	✔b) Microcephaly	c) Diabetes	d) Epilepsy
128)Environmental factors causing abnormal development are grouped together as .			
a) Toxins	b) Carcinogens	c) Mutagens	✔d) Teratogens
129)The branch of biology which deals with abnormal development is called .			
✔a) Teratology	b) Palaeontology	c) Gerontology	d) Mythology
130)In ascidian fertilized egg , yellow cytoplasm gives rise to .			
✔a) Muscle cells	b) Larval epidermis	c) Notochord & neural tube	d) Gut
131)Somites are formed and organized by .			
a) Ectoderm	✔b) Mesoderm	c) Endoderm	d) Blastoderm
132)Hypoblast is mainly presumptive .			
✔a) Endoderm	b) Ectoderm	c) Mesoderm	d) Blastoderm
133)V - Shaped chromosomes are called .			
a) Acrocentric	b) Telocentric	✔c) Metacentric	d) Submetacentric

134)The particular array of chromosomes that an individual processes is called its .			
a) Kinesis	✔b) Karyotype	c) Kinetochore	d) Kinetomere
139)Unlike most proteins , histones are			
✔a) Positively charged	b) Negatively charged	c) Neutral	d) Discharged
140)Number of histone protein molecules in a single nucleosome are .			
a) 06	b) 09	✔c) 08	d) 10
141)Highly condensed portions of the chromatin are called .			
a) Euchromatin	✔b) Heterochromatin	c) Supercoils	d) Centromeres
142)DNA was discovered in .			
✔a) 1869	b) 1864	c) 1861	d) 1871
143)The enzyme which joins the two pieces of DNA is			
a) DNA polymerase	✔b) DNA ligase	c) Restriction endonuclease	d) DNA polymerase
144)Which strand of DNA elongates towards the replication fork ?			
a) Parental strand	✔b) Leading strand	c) Lagging strand	d) Sense strand
145)mRNA is synthesized by .			
a) DNA polymerase	b) RNA ligase	✔c) RNA polymerase	d) Endonuclease
146)Which of the following polymerase synthesize tRNA .			
a) RNA polymerase - I	b) RNA polymerase - II	✔c) RNA polymerase - III	d) RNA polymerase
147)Which of the following is a " Start " codon ?			
✔a) AUG	b) UAA	c) UAG	d) UGA
148)A combination of three nucleotides of DNA that specifies an amino acid is called .			
a) Cistron	b) Anticodon	c) Entron	✔d) Genetic code
149)This condition appears as a result of point mutation .			
a) Down syndrome	b) Turner syndrome	c) Klinefelter syndrome	✔d) Sickle cell anemia
150) The genetic code for gylcine is .			
a) UAG	b) GAU	c) GUA	✔d) GGU
151) Pentose sugar in the molecule of DNA is .			
a) Ribose	✔b) Deoxyribose	c) Lactose	d) Sucrose
156)The spindle fibers are composed of RNA and protein called .			
a) Insulin	✔b) Tubulin	c) Actin	d) Myosin
157)At cytokinesis in plants , a membrane structure phragmoplast is formed from vesicles which originate form .			
a) Lysosomes	b) Endoplasic retcuium	✔c) Golgi complex	d) Centrioles
158)The phase of mitosis which ensures equal distribution of chromatids in daughter cell is .			
a) Prophase	b) Metaphase	✔c) Anaphase	d) Telophase
159)Karyokinesis involves division of .			
a) Cell	✔b) Nucleus	c) Cytoplasm	d) Cell membrane
160)Mitotic apparatus is organized during .			
✔a) Prophase	b) Metaphase	c) Anaphase	d) Telophase
161)During cell division the nuclear division is called .			
a) Cytokinesis	✔b) Karyokinesis	c) Karyotype	d) Plasmolysis
162)Phragmoplast is formed by vesicles originated from			
a) Endoplasmic reticulum	✔b) Golgi complex	c) Chloroplast	d) Mitochondria
163)The tumor which is localized and not transferred to other body parts .			
a) Malignant	✔b) Benign	c) Apoptosis	d) Necrosis
164)Which of the following behaves like normal cells ?			
a) Benign tumor	b) Malignant tumor	✔c) Cancer	d) Gall
165)Cancer is caused by mutation in .			
a) Germ cells	✔b) Somatic cells	c) Epidermal cells	d) Reproductive cells
166)The condensation of chromosomes reaches to its maximum phase during .			
a) Letotene	b) Pachytene	c) Zygotene	✔d) Diakinesis
167)Meiosis generally takes place in plants during formation of .			
a) Gametes	✔b) Sportes	c) Zygote	d) Embryo

168)Each bivalent is consists of four .			
a) Chromosomes	✔b) Chromatids	c) Chiasmata	d) Spores
169)In which stage of meiosis , the paired chromosomes repel each other and begin to separate .			
a) Leptotene	✔b) Zygot		d) Diplotene
170)Synapsis takes place in .			
a) Leptotene	✔b) Zygot		d) Diplotene
173)All are related to turner's syndrome except .			
a) Short stature	b) Webbed neck	✔c) Broad face	d) Without ovaries
175)The sex chromosomes of the person affected with klinefelter's syndrome are.			
a) SYY	b) XXX	✔c) XXY	d) XY
176)The autosomal non-disjuction in man in which 21st pair of chromosome fail to segregate resulting in gametes with 24 chromosome is			
✔a) Down's syndrome	b) Turner's syndrome	c) Klinfelter	d) Jacob's syndrome
177)The pairing of homologous chromosomes in completed in phase of meiosis .			
a) Leptotene	b) Zygotene	✔c) Pachytene	d) Diplotene
178)All the genes found in a breeding population constitute .			
a) Genotype	b) Genome	c) Gene frequency	✔d) Gene pool
179)This cross finds out the homozygous or heterozygous nature of the genotype .			
a) Self cross	b) Back cross	✔c) Test cross	d) Dihybrid cross
180)ABO blood group system was discovered in 1901 by			
a) Punnet	b) Wiener	c) Bernstein	✔d) Landsteiner
181) ABO blood group system is encoded by a single polymorphic gene with			
a) Three multiple alleles	b) Five multiple alleles	c) Four multiple alleles	d) Six multiple alleles
182) ABO Blood system was discovered by			
✔a) Landsteiner	b) Levine	c) Bernstein	d) Waldayer
183)Universal recipient blood group is blood group .			
a) A	b) B	✔c) AB	d) O
184)The blood serum containing antibodies is called .			
a) Antigen	b) Immunoglobulin	c) Plasma	✔d) Antiserum
186)A sex - limited trait is limited to only one sex due to			
✔a) Anatomical difference	b) Physiolo	nce	d) Taxonomic difference
189)If an off spring has its parents types 30+30 and recombinant types 20+20 . What is the percentage of its recombination frequency .			
a) 20	✔b) 40	c) 60	d) 80
190) Recombinant DNA is introduced into the host cell by means of .			
✔a) Vector	b) Phage	c) Bacterium	d) Fungus
191) In which year Hamilton 0.Smith , at John Hopkins University , Isolated the first restriction Enzymes ?			
a) 1965	✔b) 1970	c) 1975	d) 1985
192) Commonly used restriction enzyme is			
a) Plasmid	b) Psc 101	c) pBR 322	✔d) Eco R1
193) Recombinant DNA is introduced into the host cell by means of .			
a) Fungus	b) Bacterium	✔c) Vector	d) Virus
194) Psc 101 has antibiotic resistance gene for			
✔a) Tetracycline	b) Ampicillin	c) Neomycin	d) Ergotine
195) It makes the bacterial cell more permeable to take up recombinant plasmids .			
a) Sodium chloride	b) Cesium chloride	✔c) Calcium chloride	d) Potassium chloride
196) Eco R1 , is a commonly used .			
a) Gene	✔b) Restriction enzyme	c) Bacteriophage	d) Bacteria
197)The enzymes which are used to cut the gene of interest are known as .			
a) DNA polymerase	✔b) Restriction endonucleases	c) RNA polymerase	d) DNA ligase
198)Aspartame is a .			

a) Monopeptide	✔b) Dipeptide	c) Tripeptide	d) Polypeptide
199)Which of these would you except to be a biotechnology product ?			
✔a) Vaccine	b) DNA probe	c) Protein	d) Steroid
200)The cells which cling to an egg after ovulation is called .			
✔a) Cumulus	b) Ovary cells	c) Heap	d) Plethora
201)Polyhdroxy butyrate is called .			
a) Antithrombin III	b) Nutura sweet	✔c) Biodegradable plastic	d) Luciferine
206)Adult transgenic tobacco plants glowed when sprayed with the substrate .			
a) Luciferon	✔b) Luciferin	c) Luciferol	d) Luciferase
207) The enzyme luciferase is produced in an insect called .			
a) Housefly	✔b) Firefly	c) Butterfly	d) Tsetsefly
208)Which enzyme acts as molecular scissors ?			
a) DNA polymerase	✔b) Restriction endonuclease	c) RNA polymerase	d) DNA gyrase
209)An antibody made by soybeans can be used for treatment of .			
a) AIDS	b) Hepatitis	c) Herpes simplex	✔d) Genital herpes
210)An antibody made by soybean can be used as treatment for .			
✔a) Herpes simplex	b) Malaria	c) AIDS	d) Gonorrhea
211)Transgenic bacteria are produced in large vats called .			
a) Transducer	✔b) Bioreactor	c) Biomultiplier	d) Culter media
212)The phenomena in which transfer of genetic material from one cell to another and can alter the genetic make up of the recipient cell is			
a) Translocation	b) Translation	c) Transduction	✔d) Transformation
213)According to endosymbiont hypothesis , the aerobic bacteria developed into .			
a) Ribosomes	b) Lysosomes	✔c) Mitochondria	d) Golgi apparatus
214)Archaeobacteria can tolerate temperature upto .			
a) 600 C	b) 900 C	✔c) 1200 C	d) 1500 C
215)Endosymbiont hypothesis was proposed by			
a) Cuvier	b) Lyell	✔c) Lynn Margulis	d) Malthus
216)A respiratory protein found in all aerobic species is the .			
a) Cytochrome - a	b) Cytochrome - b	✔c) Cytochrome - c	d) Cytochrome - d
217)In terrestrial vertebrates , the gill pouches develop into .			
a) Gills	b) Lungs	c) Nose	✔d) Eustachian tube
218)Which of the following is vestigial organ of whale ?			
a) Pelvis	b) Leg bones		✔d) Pelvis and leg bones
219)The total aggregate of genes in a population at any one time is called .			
a) Genome	b) Successi		d) Gene flow
222)Emigration and immigration of members of population causes disturbance in the .			
a) Genetic Drift	b) Genotype	c) Gene pool	✔d) Gene frequency
223)Biogeography , is the geographical distribution of .			
a) Phylum	b) Class	✔c) Species	d) Genus
224)The floral parts of a flowering plant are .			
✔a) Homologous	b) Analogous	c) Similar	d) Different
225)Which one is not a vestigial organ of human being ?			
a) Appendix	b) Coccyx	c) Nictitating membrane	✔d) Eye lid
226)A group of inter breeding individuals , belonging to same species and sharing a common geographic area , is called .			
a) Community	b) Biome	✔c) Population	d) Ecosystem
227)Biome is a large .			
a) Simple community	b) Complex community	✔c) Regional community	d) Climax community
228)Once nitrate enters the plant cell it is reduced to .			
a) Nitrite	✔b) Ammonia	c) Proteins	d) Carbohydrate

229)Mutualism is a type of .			
✔a) Symbiosis	b) Commensalism	c) Parasitism	d) Predation
230)The bacteria in the root nodules fix nitrogen in soil from air , converting it into			
a) Nitrate	✔b) Nitrite	c) Ammonia	d) Amino Acid
231) An association between organisms of different species in which one partner gets benefit and other is harmed .			
a) Mutualism	b) Symbiosis	✔c) Parasitism	d) Commensalism
232) The symbiotic relationship between insect and flowering plants is the example of .			
a) Parasitism	b) Predation	✔c) Mutualism	d) Commensalism
233)Lichens are an example of			
a) Parasitism	✔b) Mutualism	c) Predation	d) Commensalism
234)Decomposers and detritus feeders are only living organism .			
a) Littoral zone	b) Limnetic zone	✔c) Profundal zone	d) Atmospheric zone
239)The producers in limnetic zone are .			
a) Amoebae	✔b) Cyanobacteria	c) Hydrilla	d) Crustanceans
240)Alpine coniferous forests are found on high .			
a) Latitudes	b) Longitudes	✔c) Altitudes	d) Slopes
241)A dominant plant of the deciduous forest is the .			
a) Cactus	b) Euphorbia	c) Acacia	✔d) Taxus baccata
242)Which one is not a desert .			
a) Thal	b) Sahara	c) Thar	✔d) Taiga
243)In temperate grassland , the rate of primary production is .			
✔a) 700 - 1500 g / m2	b) 700 - 1400 g / m2	c) 700 - 1600 g / m2	d) 700 - 1300 g / m2
244)In Sindh , the desert ecosystem is called .			
✔a) Thar	b) Thal	c) Sahara	d) Gobi
245)Average rain fall in desert ecosystem is .			
✔a) 10 - 20 inches	b) 30 - 40 inches	c) 50 - 60 inches	d) 70 - 80 inches
246)Ozone in the upper layer of atmosphere that filters .			
a) IR radiation	✔b) UV radiation	c) radiation	d)radiation
247)The colour of the pure form of ozone (O3) is .			
a) Whitish	b) Yellowish	✔c) Bluish	d) Greenish
248)Ozone depletion is commonly caused by .			
✔a) CFC2	b) CO2	c) Smoke	d) Smong
249)The biomes which has been increased in area by human activities .			
a) Grassland	b) Savanna	c) Coniferous	✔d) Desert
250)Northern coniferous forests are called as .			
a) Boreal	✔b) Taiga	c) Alpine	d) Deciduous

SUBJECTIVE TYPE

Q.No # 2

1. What is lithotripsy? **(LB-2018)**
2. What are pyrogens? **(LB-2008, 2013)**
3. What is hypertonic environment and what changes occur in a cell in such environment? **(OR)** Differentiate between hypotonic and hypertonic environment. (LB-2010, 2012, 2016)
4. What are osmoconformers and osmoregulators? **(LB-2011)**
5. What is extra corporal shock wave lithotripsy? **(LB-2014)**
6. What are flame cells? Give their role. **(OR)** What are flame cells? Why they are called so? **(LB-2014)**
7. Write structural formula of urea and uric acid. **(LB-2010, 2012)**
8. Define homeostasis. Give its importance. **(LB-2011, 2013)**
9. Define anhydrobiosis with an example. **(LB-2012, 2014, 2018)**
10. Differentiate between poikilotherms and homeotherms. **(LB-2012, 2013)**
11. Differentiate between ectotherms and endotherms. **(LB-2009, 2014)**
12. Differentiate between hemodialysis and peritoneal dialysis. **(LB-2018)**

13. Differentiate between xerophytes and mesophytes. **(OR)** What are xerophytes? Give two adaptations of xerophytes. **(LB-2012)**
14. Draw and label urea cycle. **(LB-2018)**
15. What is sciatica? **(OR)** What is sciatica and its causes? **(LB-2009, 2010, 2016)**
16. What is foreman triosseum? **(OR)** What is foreman triosseum? How it is formed? **(LB-2010, 2015)**
17. What is the role of vascular cambium? **(LB-2011, 2012)**
18. What is axial skeleton? **(LB-2012)**
19. What is meant by passive and active flight? **(OR)** Differentiate between active and passive flight. **(LB- 2012, 2013)**
20. What is rickets? Give its causes and cure. **(OR)** How is rickets produced? **(LB-2012)**
21. What is herniation of discs? **(OR)** Define disc-slip. **(OR)** What are the causes of herniation of discs? **(LB-2010, 2011, 2013)**
22. What is the difference between tetanus and muscle tetany? **(LB-2018)**
23. What is the difference between exoskeleton and endoskeleton? **(OR)** What is the composition of exoskeleton? **(LB-2015)**
24. What is effective and recovery stroke? **(OR)** Differentiate between effective and recovery stroke. **(LB- 2016)**
25. What are plantigrade and unguligrade? **(OR)** What are plantigrade, digitigrade and unguligrade mammals? **(LB-2017)**
26. Characterize collenchyma cells. **(LB-2011, 2012)**
27. Compare phototropism and geotropism. **(LB-2017)**
28. Compare hinge joint with ball and socket joint. **(LB-2012, 2018)**
29. Define antagonistic movement of muscles. **(LB-2018)**
30. Discuss two main types of cartilage. **(LB-2013)**
31. Differentiate between compact bone and spongy bone. Give only two differences. **(LB-2018)**
32. Distinguish between axial skeleton and appendicular skeleton. **(LB-2008, 2014)**
33. Distinguish between the phototactic and chemotactic movements. **(OR)** What is phototactic movement?**(OR)** What is chemotactic movement? **(LB-2015)**
34. Differentiate between origin and insertion of muscle.
35. Differentiate between ligament and tendon. **(LB-2018)**
36. Explain two types of nastic movements. **(OR)** Compare epinasty and hyponasty. **(LB-2012, 2013, 2016)**
37. Enlist some of the functions of skeleton. **(LB-2015)**
38. Name the different types of cells associated with bones. **(LB-2014)**
39. What is innate behavior? **(LB-2016)**
40. What is the role of hypothalamus? **(LB-2016)**
41. What is synapse? **(LB-2011)**
42. What are axons and dendrites? **(OR)** How axon differ from dendrites. **(LB-2009, 2010, 2014)**
43. What is reflex arc? **(OR)** Differentiate between reflex action and reflex arc. **(LB-2012, 2014, 2018)**
44. What is the difference between CNS and PNS? **(LB-2012, 2016)**
45. What is the function of parathyroid gland or parathormone? **(LB-2008, 2013, 2016)**
46. What is Parkinson's disease? **(OR)** Differentiate between Parkinson's and Epilepsy. **(LB-2009, 2012, 2018)**
47. What are gastrin and secretin? **(OR)** Give the functions of secretin and gastrin. **(OR)** Name the two hormones of gut. **(LB-2010, 2013)**
48. Write function of photoreceptors and nociceptors. **(LB-2014)**
49. Define saltatory impulse. **(OR)** Define saltatory impulse and synapse. **(LB-2001, 2011)**
50. Define feedback mechanism. **(LB-2018)**
51. Differentiate between etiolation and chlorosis. **(OR)** What is chlorosis? **(LB-2018)**
52. Differentiate between active and resting membrane potential. **(LB-2018)**
53. Give two commercial applications of Gibberellins. **(LB-2011, 2014, 2018)**
54. What is the action of nicotine on coordination? **(LB-2011-2015)**
55. What is parthenocarpy? **(OR)** Define parthenocarpy with examples. **(OR)** How does parthenocarpy differ from parthenogenesis? **(LB-2010, 2011, 2013)**
56. Write down at least two important measures to prevent AIDS. **(LB-2013)**
57. What are Oviparous, Viviparous and Ovoviviparous animals? **(OR)** Give difference between Oviparous and Viviparous animals. **(OR)** What are Ovoviviparous animals? Give examples. **(OR)** Differentiate between oviparity and viviparity. **(LB-2008, 2009, 2012, 2013)**
58. Classify the plants according to photoperiodic requirement for flowering. **(OR)** Name types of plants according to photoperiodism. **(LB-2013, 2015)**
59. Define photoperiodism and write its effects in plants. **(OR)** Give importance of photoperiodism in plants. **(LB-2011, 2016)**
60. Define apomixes. **(OR)** What is meant by apomixes? **(OR)** What is apomixes **(LB-2014, 2018)**
61. Define vernalization. **(OR)** What is vernalization**? (LB-2012, 2018)**
62. Differentiate between haploid parthenogenesis and diploid parthenogenesis. **(OR)** Define diploid parthenogenesis. **(OR)** Define diploid parthenogenesis. Give an example. **(LB-2012)**
63. Differentiate between internal and external fertilization. **(LB-2018)**

64. Differentiate between identical twins and fraternal twins. **(OR)** How identical twins and fraternal twins are produced? **(LB-2010, 2013)**
65. How can you differentiate between menstrual cycle and oestrous cycle? **(OR)** Define/ Explain oestrous cycle. **(LB-2014)**
66. How test tube babies are produced? **(OR)** What are test tube babies **(LB-2009, 2014)**
67. What do you mean by open growth? **(LB-2011, 2012)**
68. What is neurula? **(OR)** What is neurocoel? **(LB-2015)**
69. What is gastrocoel and from which germ layer it is originated? **(LB-2013)**
70. What is meant by discoidal cleavage? **(LB-2016)**
71. What is meristem? **(OR)** Define meristem. Name its types based on position. **(OR)** Describe various types of meristems. **(OR)** What is apical meristem? **(OR)** What are intercalary meristems. Give their role. **(OR)** What do you mean by lateral meristem. **(LB-2013, 2015, 2016, 2017, 2018)**
72. What is the difference between epiblast and hypoblast? **(LB-2017)**
73. Briefly describe the external and internal factors that affect growth in plants. **(LB-2009)**
74. Define aging and write its symptoms. **(OR)** Give symptoms of aging. **(OR)** What are important signs of aging in human beings? **(OR)** What are the causes of aging and how aging can be slowed down? **(LB- 2014)**
75. Define organizer and inducer substance. **(OR)** What are primary organizer and inducer substances? **(LB-2009, 2013)**
76. Define regeneration with examples. **(LB-2011)**
77. Differentiate between gerontology and teratology. **(LB-2010)**
78. Differentiate between growth and development. **(OR)** Define growth. **(LB-2010, 2016, 2017)**
79. Differentiate between primary and secondary growth. **(LB-2018)**
80. Give the name of the two sheets like layers into which mesoderm splits and name the cavity formed between these. **(OR)** Differentiate between somatic and splanchnic mesoderm. **(LB-2012, 2013)**
81. How do final size of cells of cortex and tracheids is attained in zone of maturation? **(LB-2013)**
82. How notochord is formed in chick embryo? **(LB-2011)**

Q.No # 3

1. What is semi-conservative replication of DNA? **(LB-2015)**
2. What are the contributions of P.A. Levene for determining the structure of DNA? **(LB-2017)**
3. What is alkaptonuria? **(OR)** What is phenylketonuria? **(OR)** Differentiate between alkaptonuria and phenylketonuria.
4. What is central dogma? **(LB-2018)**
5. What is genetic code? **(OR)** What are non-sense codons? **(OR)** Enlist non-sense codons and their function. **(OR)**
6. Where codon and anticodon are situated? **(LB-2012, 2014, 2018)**
7. What is heterochromatin? (OR) What is euchromatin? **(OR)** Differentiate between heterochromatin and euchromatin. **(LB-2016, 2018)**
8. What is mutation? (OR) What do you mean by mutations? **(OR)** Define mutation and differentiate between chromosomal aberration and point mutation. **(LB-2010, 2013, 2017)**
9. What is phosphodiester linkage? Draw structural formula. **(OR)** What is phosphodiester bond or linkage? **(LB-2013, 2015, 2016)**
10. Define chromosomal theory of inheritance. **(LB-2010, 2014)**
11. Define karyotype. **(OR)** What is karyotype? **(OR)** What do you mean by karyotype? Give its significance. **(LB-2014)**
12. Define nucleosome. **(LB-2012)**
13. Define nucleotide and nucleoside. **(LB-2017)**
14. Define one gene/one polypeptide hypothesis? **(LB-2017)**
15. Define point mutation. **(OR)** State point mutation with examples. **(OR)** Define point mutations. Give one example. **(LB-2012, 2014, 2018)**
16. Define transcription and how it is initiated? **(OR)** What is the function of RNA polymerase in transcription? **(LB-2010, 2013)**
17. Differentiate between sense and anti-sense strands of DNA. **(LB-2018)**
18. Give the role and kinds of tRNA. **(LB-2013)**
19. What is Necrosis? **(LB-2014)**
20. What is Klinefelter's syndrome? **(LB-2016)**
21. What are the apparent symptoms or effects of Down's syndrome? **(OR)** What is Down's syndrome? **(OR)** Describe causes and symptoms of Down's syndrome. **(OR)** Write symptoms of Down's syndrome. **(LB-2014, 2018)**
22. What are the symptoms of Turner's syndrome? **(OR)** How Turner's syndrome is caused and give its features. **(OR)** What is Turner's syndrome? **(LB-2013, 2014)**
23. What is mitotic apparatus? **(OR)** What is mitotic apparatus? Give its functions. **(LB-2013, 2016, 2018)**
24. Define cell cycle. **(LB-2015,2017)**
25. Define meiosis and mitosis. **(OR)** What is the importance of mitosis and meiosis? **(LB-2017)**

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26. Differentiate between Go-phase and S-phase of interphase. **(OR)** Differentiate between interphase and mitotic phase. **(OR)** Describe changes occur during G1-phase. **(LB-2011, 2012, 2016)**
27. Give two main importance of meiosis. **(LB-2013)**
28. How can you identify Cancer cells? **(OR)** Cancer is uncontrolled cell division, explain. **(LB-2011)**
29. In what respects does mitosis in plant cells differ from that in animal cells? **(OR)** Explain cytokinesis in plants. **(OR)** How cytokinesis occur in plants? **(LB-2010, 2018)**
30. What is Bombay phenotype? **(LB-2016, 2017)**
31. What is MODY? **(LB-2008, 2015, 2016)**
32. What are the genes and alleles? **(LB-2016)**
33. What is the role of blood groups in establishing parentage? **(LB-2010)**
34. What is meant by universal blood donor and universal recipient?
35. What is crossing over? What is its importance? **(LB-2013)**
36. What is bean-bag genetics? **(OR)** What is a gene pool? **(OR)** Differentiate between gene and gene pool. **(LB-2014)**
37. How does ABO incompatibility protect the developing baby against Rh- incompatibility? **(LB-2011, 2012)**
38. What is meant by linkage, linked genes and linkage groups? **(OR)** What is a linkage group? **(OR)** Define linkage group by giving example. **(OR)** What are linkage groups? Give their number in human beings. **(OR)** Define gene linkage and gene linkage groups **(LB-2012, 2013, 2015, 2018)**
39. What is test cross? Why did Mendel suggest this cross? **(OR)** Give the significance of test cross. **(OR)**What is test cross? Give its uses. **(LB-2011, 2012, 2013, 2018)**
40. What is the difference between heterogametic and homogametic individuals? **(OR)** What is heterogametic individual? Give example. **(LB-2018)**
41. What are compound sex chromosomes and their example? **(LB-2013)**
42. Define laws of Mendel. **(OR)** Define Mendel's law of segregation (law of purity of gametes). **(OR)** Define law of segregation. **(LB-2015, 2018)**
43. Differentiate between incomplete dominance and co-dominance. **(LB-2012)**
44. Differentiate between autosomes and sex-chromosomes. **(LB-2011)**
45. Differentiate between homozygous and heterozygous. **(LB-2011, 2014, 2016)**
46. Differentiate between allele and multiple alleles? **(OR)** What are multiple alleles? Give example. **(LB- 2014)**
47. Differentiate between dominance and epistasis. **(OR)** What is epistasis? How it differs from dominance? **(LB-2010, 2012, 2018)**
48. Differentiate between sex-limited and sex-influenced traits. **(OR)** What are sex-limited traits? **(OR)** What are sex-influenced traits? **(OR)** What is the sex-limited traits? Give an example. **(LB-2008, 2009, 2013, 2017, 2018)**
49. Distinguish between polygenes and pleiotropy. **(OR)** Define pleiotropy. **(OR)** What is pleiotropy and its example? **(LB-2013)**
50. Give the concept of fixed allele**. (LB-2012)**
51. How sex determination occurs in yeast? **(LB-2017)**
52. What is a probe? **(LB-2014)**
53. What is gene pharming? **(LB-2018)**
54. What are Palindromic sequences? **(LB-2013, 2016, 2018)**
55. What are the various methods of gene or DNA sequencing? **(LB-2016)**
56. What are the two goals of Human Genome Project? **(LB-2016, 2018)**
57. What are transgenic plants. **(OR)** Give two advantages of transgenic plants. **(LB-2011, 2014, 2015)**
58. What is Ex-vivo gene therapy? **(OR)** Differentiate between Ex-vivo and In-vivo gene therapy. **(LB- 2016, 2017)**
59. What is a genome and genomic library? **(OR)** Differentiate between genome and genomic library. **(OR)**Define genomic library. **(LB-2016, 2018)**
60. What is totipotency? (OR) What is totipotent cell? **(OR)** Define the term totipotent. **(OR)** Why plant cells are said to be totipotent? **(LB-2014, 2017)**
61. Define biotechnology. Give its application. **(LB-2016)**
62. Define Molecular scissors. **(OR)** What are restriction enzymes? Give example. **(OR)** Differentiate between molecular scissors and molecular vectors? **(LB-2009, 2018)**
63. What is the role of molecular carrier-the vector? **(OR)** Differentiate between plasmids pSC 101 and pBR 322? **(OR)** Elaborate the use of plasmids. **(OR)** Mention the role of lambda phage during recombinant DNA technology. **(LB-2012, 2013, 2014, 2017)**

Q.No # 4

1. What is genetic drift? **(LB-2010, 2011, 2012)**
2. What are hydrothermal vents? How do they support life?
3. What is modern synthesis/ Neo-Darwinism? (**OR**) Give the concept of Neo-Darwinism. **(LB-2012, 2014)**
4. Write the name of theories of evolution presented by Lamarck and Darwin. **(LB-2011)**
5. What are vestigial organs? Name some important vestigial organs of man. (**OR**) What are vestigial organs? Give one example **(LB-2010, 2012, 2014, 2018)**
6. Define fossil. Where are most of the fossils found? (**LB-2014**)

7. Define endangered species. (OR) What are endangered species? Give examples. (OR) Differentiate between endangered and threatened species. **(LB-2018)**
8. Define Hardy Weinberg Theorem and give its equation in the form of binomial expansion. **(LB-2013)**
9. Differentiate between homologous and analogous organs. (**OR**) Define homologous organs by giving examples **(LB-2011, 2012)**
10. What is ammonification? **(LB-2010)**
11. What is assimilation? **(LB-2014)**
12. What is grazing? How grazing affect the texture of soil? (**OR**) Define grazing. How grazers affect the ecosystem? **(LB-2008, 2010)**
13. What is biome? (**OR**) Differentiate between biome and biosphere?
14. Define predation. (**OR**) Give the significance of predation. **(LB-2012, 2016)**
15. Define succession and name its types. **(LB-2014)**
16. Define biogeochemical cycles. (**OR**) What are biogeochemical cycles? **(LB-2012)**
17. Define productivity of an ecosystem and differentiate between gross primary production and net primary production. **(LB-2008)**
18. Define ecosystem. Write its components. (**OR**) Define ecosystem. **(LB-2012, 2016)**
19. Define biosphere. (**OR**) What is biosphere. (**OR**) Define biosphere and ecosystem. **(LB-2014, 2015, 2018)**
20. Define parasitism. Give its significance. (**OR**) Differentiate between predation and parasitism. **(LB- 2009, 2012)**
21. Define commensalism. Give one example. (**OR**) Define commensalism with the help of an example. **(LB-2013, 2018)**
22. **Define food** chain and food web. (**OR**) Define food chain by giving an example. **(LB-2010, 2012, 2013, 2015)**
23. Differentiate between population and community. **(LB-2014)**
24. Differentiate between habitat and niche. (**OR**) Define niche. (**OR**) Explain ecological niche. **(LB-2011, 2012, 2013)**
25. Differentiate between autecology and synecology. (**OR**) What is synecology? (**OR**) What is autecology? **(LB-2011, 2013, 2018)**
26. Differentiate between micro and macro nutrients? **(LB-2010)**
27. Differentiate between consumers and decomposers. (**OR**) What are consumers? **(LB-2014**)
28. Differentiate between hydrosere and xerosere. **(LB-2015, 2017)**
29. Differentiate between primary and secondary succession. (**OR**) How primary succession differ from secondary succession? **(LB-2012, 2017)**
30. What is the composition of air of terrestrial ecosystem? **(LB-2012)**
31. What is the effect of human impact on Tundra ecosystem? **(LB-2013)**
32. What is the range of rainfall and temperature in Temperate Deciduous Forest (**OR**) Discuss animal life of temperate deciduous forest? **(LB-2012)**
33. What is meant by layering in a grassland ecosystem? (**OR**) Give the layering characteristics of grassland. **(LB-2013)**
34. What is profundal zone? Give its one character. (**OR**) What type of organisms are present in profundal zone of lake? **(LB-2018)**
35. Differentiate between Alpine and Boreal forests. **(LB-2009, 2018)**
36. Differentiate between Zooplankton and Phytoplankton. **(LB-2008, 2011)**
37. Differentiate among littoral, limnetic and profundal zone. (**OR**) Characterize littoral zone of fresh water lakes. **(OR)** What is limnetic zone mention its life. **(LB-2013, 2014)**
38. Enlist two adaptations in plants and two in animals for a terrestrial ecosystem. (**OR**) Give two adaptations of terrestrial ecosystem. **(LB-2010, 2012)**
39. Give the name of some major ecosystems on land in Pakistan.
40. Give location of Tundra ecosystem in Pakistan. **(LB-2014)**
41. Mention the characteristics of plant life in desert ecosystem. **(LB-2013)**
42. What is acid rain? **(LB-2013)**
43. What is Ozone? (**OR**) Give the importance of ozone layer. **(LB-2017)**
44. Write names of various types of pollution. **(LB-2011)**
45. What are the main sources of water pollution? (**OR**) Give main causes of water pollution. **(LB-2012, 2015)**
46. Write the causes and effects of ozone depletion? (**OR**) Give the effects of ozone depletion on life. **(LB- 2012)**
47. What are solid wastes and how these can be used as source of energy? (**OR**) Give importance of solid waste.
48. What do you mean by non-renewable resources? (**OR**) What are renewable resources. Give examples. (**OR**) Differentiate between renewable and non-renewable resources. **(LB- 2011, 2013, 2014, 2016, 2018)**
49. What measures should be taken for conservation of energy? (**OR**) How we can save energy? Mention any four ways in which we can save energy. (**OR**) Write four ways of energy conservation? **(LB-2014, 2017)**
50. What is deforestation**? (OR)** What is afforestation? **(OR)** What is reforestation? **(OR)** What is the difference between deforestation and afforestation? **(OR)** Differentiate between afforestation and reforestation. **(OR)** What is the difference among deforestation, afforestation and reforestation? **(LB- 2014, 2015)**
51. Define greenhouse effect.
52. Describe abuses of land. **(LB-2012)**
53. Define soil and give its basic constituents. **(OR)** What is soil? **(OR)** What is soil? Give its basic constituents. **(LB-2016, 2018)**

54. Differentiate between Population Explosion and Population Pressure. **(OR)** Enlist some reasons of Population Explosion in the world also describe Population Pressure. **(OR)** Write the reasons of world Population Explosion. **(OR)** What do you mean by Population Explosion and give its two causes? **(LB- 2010,2013,2014)**
55. How is air important to life as a source? **(LB-2012)**
56. Why trees are called environmental buffers? **(OR)** Define environmental buffers.

LONG QUESTION

Q.NO.5

1. Write note on osmoregulation in marine fishes. **(LB-2014)**
2. Write down the structure of a nephron. **(LB-2012)**
3. Discuss excretion in Cockroach. **(LB-2016)**
4. Describe various kidney problems and their cure in human. (**OR**) Discuss kidney problems in humans**. (LB-2008, 2010)**
5. Explain excretion in plants. (**OR**) Describe the excretion in plants. **(LB-2012, 2013, 2014, 2018)**
6. Write a note on grazing. **(LB-2014)**
7. Write a note on nitrogen cycle. **(LB-2011, 2012, 2015, 2016)**
8. Discuss the flow of energy in food chain of an ecosystem. **(LB-2018)**
9. Explain the biotic component of an ecosystem. **(LB-2012)**

Q.NO.6 9 24

1. What are the joints? Describe their types. (**OR**) Define and explain briefly the fibrous, cartilaginous and synovial joints. **(LB-2012, 2013)**
2. What is endoskeleton? Describe bone and cartilage. **(LB-2016)**
3. What is Sliding Filament Model of muscle contraction? What does it explain? **(LB-2018)**
4. Write a note on human appendicular skeleton. **(LB-2016)**
5. Write down the mechanism of muscle contraction. **(LB-2011)**
6. Describe the significance of secondary growth. **(LB-2015)**
7. Explain about exoskeleton in Arthropods. **(LB-2012)**
8. Explain the role of Calcium ions in the process of Sliding Filament Model**. (LB-2010)**
9. Give an account of paratonic movement in plants. **(LB-2015)**
10. What are chromosomes? What do you know about their number, karyotype, types and shapes? (**OR**) Describe types of chromosomes on the basis of centromere. **(LB-2015, 2017)**
11. Describe Watson-Crick Model of DNA in detail. **(LB-2013, 2014)**

Q.NO.7

1. Write any four differences between nervous and chemical coordination. **(LB-2018)**
2. Define and explain feedback mechanism?
3. Define and explain nerve impulse. (**OR**) Describe initiation of nerve impulse. **(LB-2014)**
4. Discuss the nervous system of Hydra. (**OR**) Compare the nervous system of Hydra and Planaria. (**OR**) Nervous system of Hydra is better developed than of Planaria. Discuss. **(LB-2012, 2013, 2016)**
5. Write a note on greenhouse effect. **(LB-2011)**
6. Write a note on deforestation and afforestation. (**OR**) Describe deforestation. **(LB-2013, 2018)**
7. Write a note on ozone layer depletion. **(LB- 2012)**
8. What is pollution? Explain the phenomenon of air pollution. **(LB-2017)**

Q.NO.8

1. Write a note on test tube babies. **(LB-2016)**
2. Compare asexual reproduction with sexual reproduction. (**OR**) Give a comprehensive comparison between asexual and sexual reproduction. **(LB-2012, 2015)**
3. Diseases with the help of examples. (**OR**) Explain Sexually Transmitted Diseases in humans. **(LB-2014, 2016, 2017)**
4. What is epistasis? Explain it with an example of Bombay phenotype**. (LB-2013)**
5. What is incomplete dominance? Explain it with an example. **(LB-2012, 2013)**
6. Define and explain multiple alleles. (**OR**) Describe multiple allelic blood group system of man. (**OR**) Discuss the genetics of ABO blood group system. (**OR**) Explain the ABO blood group system. **(LB- 2012, 2018)**
7. Define and explain sex-linkage in Drosophila. **(LB-2015)**
8. Describe Mendel's law of segregation (law of purity of gametes) (**OR**) Define Mendel's law of segregation. Explain it with one example. (**OR**) What is Mendel's law of segregation? Illustrate it with an example **(LB-2011, 2016)**
9. Define Mendel's law of Independent Assortment. Explain it with an example.

Q.NO.9

1. What is growth? Discuss different phases of growth in plants. **(OR)** Discuss different phases of plant growth. **(LB-2014)**
2. What is aging? Explain its process. (**OR**) Define and explain aging. (**OR**) What is aging? How would you explain this process? (**OR**) What is aging? Describe its causes and symptoms. **(LB-2013, 2015, 2016, 2017, 2018)**

3. Explain the role of nucleus in development. (**OR**) Describe the role of nucleus in development. **(LB- 2010, 2017)**
4. How comparative embryology support the process of evolution. (**OR**) Describe comparative embryology and molecular biology as an evidence of evolution**. (LB-2018)**
5. Describe the evidences of evolution from Biogeography and fossil record. **(LB-2008)**
6. Discuss evolution from prokaryotes to eukaryotes. **(LB-2011)**

May all your hard works before the exam be rewarded with the best.
May you obtain the highest marks and your success be continued.